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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,150	03/10/2004	Toshihiro Ooishi	50395-259	2537

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600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER

HOFFMANN, JOHN M

ART UNIT	PAPER NUMBER
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1731

MAIL DATE	DELIVERY MODE
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06/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/796,150	OOISHI ET AL.	
	Examiner	Art Unit	
	John Hoffmann	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election of Group I in the reply filed on 25 April 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim 6 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 25 April 2007.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1: there is no antecedent basis for "the center region of the flame". It is noted that based on applicant's disclosure that there is no implicit center region. As shown in figure 2c, the center region LT, is substantially just a point. But for figure 2A, the center region LT – thus it is presumed that the term "center region" can be any (arbitrary) centrally located region. Compare this to a sphere-with such it is proper to refer to "the radius" of the sphere – because there is exactly one. Then for a cone, one

could not reasonably refer to “the radius” of the cone, rather one would have to refer to “a radius” – because a cone has any number of radii. Likewise a flame would have any number of “center portions”.

Claim 2: the term “tubular port” is indefinite as to its meaning. A “port” is just an opening – an opening is generally a 2-dimensional region of nothingness. Figures 3A and 3B show 33 (i.e. the “tubular port”) to be that nothingness. A tube generally have two dimension – often an inner diameter and outer diameter. 33 only has one diameter. Examiner at first thought one would understand that “tubular port” would mean “circular port” – but then examiner realized that a tube can be any shape – such as a square.

Claim 3: there is confusing antecedent basis for “the tubular port” – claim 2 refers to two such ports. It is unclear if the claim is referring to each, both or either.

Claim 4: there is no antecedent basis for “the diameter of the porous glass particle deposited body” – it is unclear if this means that claim 1 is limited to bodies that have diameters.

Claim 5: it is unclear what is meant by the distance is 150 to 500mm. It is unclear if it means that it a distance within the range of 150 to 500. Or if it means the closest distance is 150mm and the furthest (point-to-point) distance is 500 mm. Or if it means something else.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Moltzan 3565345.

Figure 4 of Moltzan discloses the deposition of glass particles 86 on a starting member 82 with a region hit by the center portion of the flame. It is noted that there is no indication as to what the temperatures are, it is deemed inherent that the outer portion would have the higher temperature, because that is where the oxidation reaction takes place. See Tsai et al "A Study of Thermophoretic Transport in a Reacting Flow with Application to External Chemical Vapor Deposition Processes", page 1905, first paragraph of section 4.1 which states "the temperature along the center line is low because the methane is flowing in the outer rings". Tsai's figure 2 also shows this. Since Moltzan also has the methane in the outer rings, but the silicon compound at the center region, one would reasonably expect that the outer regions would be hotter than the inner region.

Claim 2: Looking to figure 2: 72 is the port for feeding material gas 58. 78 is a port for feeding a combustible gas 50. Other ports 78 are the tubular ports that feed a combustion assisting gas 42 – they are on a virtual concentric circle. See also figures 3, 7 and 8. Claim 2 has two parts (a) and (b); there is no conjunction between these two limitations. One reasonable interpretation is that the missing conjunction is "and", another reasonable interpretation is that the missing conjunction is "or". Since "or" would result in a broader interpretation, and since the Office interprets claims using the

broadest reasonable interpretation, the claim is interpreted as if there is an "or" missing from between parts a) and b).

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moltzan 3565345 in view of Tsai et al ("A Study of thermophoretic transport in a reacting flow with application to external chemical vapor deposition processes") or Bocko 4604118) in view of Tsai et al .

Each reference teaches substantially the same invention as disclosed. Namely, the raw material gas is fed in the center of the burner, a combustion gas surround it, and a shield gas between the two. As disclosed in Tsai (see figure 2 and section 4.1) the flame is relatively cool at the axis, and hotter at radial distances. Still further, Figure 9 of Tsai shows that deposition efficiency depends on separation distance.

It would have been obvious to perform routine experimentation to determine the optimal burner placement. See also Moltzan's figures 5-6 and the associated text which discloses that the port angles are result-effective variables. It would have been an obvious matter or routine experimentation, to determine the optimal burner placement. The fact that applicant realized an inherent temperature profile is not evidence of non-obviousness – especially since Tsai has already demonstrated that such is known.

Claim 3 recites flow velocity values. Although Moltzan does not disclose them, From col. 5, lines 7-14 and figure 10 – it is clear that the velocity of the gas is a result effective variable. IT would have been obvious to perform routine experimentation to determine the optimal flow velocities.

Claim 4 requires changing the flow velocity as the preform grows in size. As shown by Tsai's figure 9, there is an optimal distance between the burner and the substrate. Since the preform is growing, the distance will continuously diminish. It is well within the level of ordinary skill to realize that initial optimal parameters would not remain optimal throughout the entire process. It would have been obvious to perform routine experimentation to determine the optimal burner conditions as a function of time.

Claim 5: as indicated above, the distance is a known result –effective variable. It would have been obvious to perform routine experimentation to determine the optimal placement.

Claim 4 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Moltzan 3565345 in view of Tsai et al or Bocko 4604118) in view of Tsai et al as applied to claims 2-3, and further in view of Backer 5180411, Ishihara 2003/0024273 or Evans 5925163.

Claim 4 requires decreasing the flow velocity of the material gas. It is well known in the fiber making art to reduce the flow of material, for any number of reasons. For example, Ishihara discloses [0054] to decrease the flow rate at locations that need less material – it is clear that the diameter is increasing as this happens. Evans discloses changing flow rates for preforms with axial changes (col. 7, line 48). And Backer teaches one way deposition (col. 23, lines 47-55) – it would have been obvious to decrease the flow rate during the return traversal, so as to save material – because one

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desires to have a deposition in essentially only one direction. It would have been obvious to decrease the flow rate in the Moltzan/Tsai or Bocko/Tsai process for any of the known reasons for decreasing the flow rate, depending upon the particular OVD process being used.

Conclusion

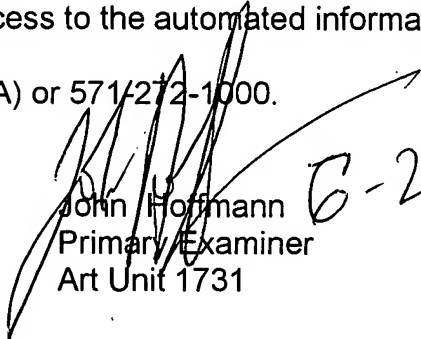
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cain and Cognolato are cited as also showing applicant's burner arrangement.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Hoffmann whose telephone number is (571) 272 1191. The examiner can normally be reached on Monday through Friday, 7:00- 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


John Hoffmann
Primary Examiner
Art Unit 1731

6-20-07

jmh